

### COMBINATION METER

All FE and TE models are equipped with a combination meter (**Figure 18**). FM and TM models may be equipped with a combination meter as an option. The combination meter is standard equipment on Canadian FM and TM models.

The combination meter includes a multifunction digital display that provides a speedometer, odometer, tripmeter, hourmeter and clock. A central processing unit (CPU) computer chip is contained within the combination meter.

A speed sensor (**Figure 19**) mounted on the engine provides driveshaft speed to the CPU in the combination meter.

Use the troubleshooting procedure in **Figure 20** to isolate a combination meter malfunction. Also refer to the wiring diagrams at the end of this manual for the specific model and year.

### FUEL SYSTEM

Many riders automatically assume that the carburetor is at fault if the engine does not run properly.

While fuel system problems are not uncommon, carburetor adjustment is seldom the answer. In many cases, adjusting the carburetor only compounds the problem by making the engine run worse.

When troubleshooting the fuel system, start at the fuel tank and work through the system, reserving the carburetor as the final point. Most fuel system problems result from an empty fuel tank, a plugged fuel filter or fuel valve, or sour fuel. Fuel system troubleshooting is covered in *Engine Is Difficult To Start*, *Poor Idle Speed Performance*, and *Poor Medium and High Speed Performance* sections in this chapter.

The carburetor choke can also present problems. Check choke operation by moving the choke knob (**Figure 3**) by hand. The choke should move freely without binding or sticking in one position. If necessary, remove the choke as described in *Carburetor Disassembly* in Chapter Eight and inspect the plunger and spring for excessive wear or damage.

### ENGINE OVERHEATING

Engine overheating is a serious problem because it can quickly cause engine seizure and damage. The following section groups five main systems with probable causes that can lead to engine overheating.

1. Ignition system:
  - a. Incorrect spark plug gap.
  - b. Incorrect spark plug heat range. (See Chapter Three.)
  - c. Faulty ICM unit/incorrect ignition timing.
2. Engine compression system:
  - a. Cylinder head gasket leak.
  - b. Heavy carbon buildup in the combustion chamber.
3. Fuel system:
  - a. Carburetor fuel level too low.
  - b. Incorrect carburetor adjustment or jetting.
  - c. Loose carburetor boot clamps.
  - d. Leaking or damaged carburetor-to-air filter housing air boot.
  - e. Incorrect air/fuel mixture.
4. Engine load:
  - a. Dragging brake(s).
  - b. Damaged drivetrain components.
  - c. Slipping clutch.

preignition. This is first noticed as a power loss but will eventually result in damage to the internal parts of the engine because of higher combustion chamber temperature.

### Detonation

Commonly called spark knock or fuel knock, detonation is the violent explosion of fuel in the combustion chamber instead of the controlled burn that occurs during normal combustion. Severe damage can result. Use of low octane gasoline is a common cause of detonation.

Even when using a high octane gasoline, detonation can still occur. Other causes are over-advanced ignition timing, lean fuel mixture at or near full throttle, inadequate engine cooling, or the excessive accumulation of carbon deposits in the combustion chamber and on the piston crown.

### Power Loss

Several factors can cause a lack of power and speed. Look for a clogged air filter or a fouled or damaged spark plug. A piston or cylinder that is galled, incorrect piston clearance, or worn or sticking piston rings may be responsible. Look for loose bolts, defective gaskets or leaking machined mating surfaces on the cylinder head, cylinder or crankcase.

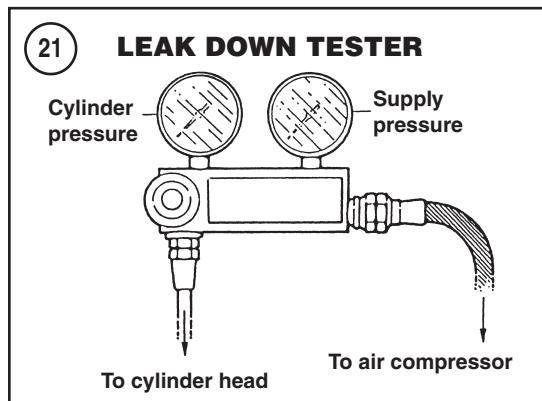
### Piston Seizure

This may be caused by incorrect bore clearance, piston rings with an improper end gap, compression leak, incorrect air/fuel mixture, spark plug of the wrong heat range or incorrect ignition timing. Overheating from any cause may result in piston seizure.

### Piston Slap

Piston slap is an audible slapping or rattling noise resulting from excessive piston-to-cylinder clearance. If allowed to continue, piston slap will eventually cause the piston skirt to crack and shatter.

To prevent piston slap, clean the air filter element on a regular schedule. If piston slap is heard, disassemble the engine top end, measure the cylinder bore and piston diameter, and check for excessive



clearance. Replace parts that exceed wear limits or are damaged.

### ENGINE NOISES

1. A knocking or pinging during acceleration can be caused by using a lower octane fuel than recommended or a poor quality fuel. Incorrect carburetor jetting or a spark plug that is too hot can also cause pinging. Refer to *Spark Plug Heat Range* in Chapter Three. Also check for excessive carbon buildup in the combustion chamber or a faulty ICM unit.
2. A slapping or rattling noises at low speed or during acceleration can be caused by excessive piston-to-cylinder wall clearance. Also check for a bent connecting rod or worn piston pin and/or piston pin holes in the piston.
3. A knocking or rapping while decelerating is usually caused by excessive rod bearing clearance.
4. A persistent knocking and vibration or other noise is usually caused by worn main bearings. If the main bearings are good, consider the following:
  - a. Loose engine mounts.
  - b. Cracked frame.
  - c. Balancer gear improperly installed.
  - d. Worn or damaged balancer gear bearings.
  - e. Leaking cylinder head gasket.
  - f. Exhaust pipe leak at cylinder head.
  - g. Stuck piston ring.
  - h. Broken piston ring.
  - i. Partial engine seizure.
  - j. Excessive connecting rod small end bearing clearance.
  - k. Excessive connecting rod big end side clearance.
  - l. Excessive crankshaft runout.

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